

**Literature review: children's non-schooling
activities and their impact on children's health,
education and well-being**

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1. Introduction

1.1 This literature review focuses on how children's non-school activities (both economic and non-economic) affect their education, health and well-being. The specific purpose of the review is to: (i) consolidate the various empirical findings on the subject, and (ii) identify gaps in the knowledge on the linkages.

1.2 The structure of the review is as follows. In the next Section 2, a synopsis of each paper is offered in terms of the research, data, methodology and main findings. The papers' limitations and their implications for the findings are also discussed. For presentation purposes the papers are classified as those dealing with the impact of child labour on children's health, education and well-being. Section 3 summarizes the linkages between children's activities and their health, education and well-being. It also discusses the common findings and conflicting conclusions of the papers. Section 4 discusses gaps in the existing empirical knowledge and recommends next steps. A list of references is provided at the end of this report.

1.3 The papers considered in the review are the following:

- *The dynamics of school and work in rural Bangladesh*: J. J. Canals-Cerda and C. Ridao-Cano
- *Impact of working time on children's health*: L. Guarcello, S. Lyon and F. Rosati
- *Household chores and child health: preliminary evidence from six countries*: F. Francavilla and S. Lyon
- *The impact of children's work on schooling: multi-country evidence*: R. Ray and G. Lancaster
- *The global child labour problem: what do we know and what can we do*: K. Basu and Z. Tzannatos
- *Child labour and school decisions in urban and rural areas: cross country evidence*: L. Ersado
- *Determinants of child labour and school attendance: the role of household unobservables*: P. Deb and F. Rosati
- *Child labour and school achievement in Latin America*: V. Gunnarsson, P. Orazem and M. Sanchez

2. The synopses of selected research on impact of child labour

A. *Impact of child labour on children's health*

2.1 Guarcello, Lyon and Rosati (2004) examine the relationship between the intensity of children's work (i.e. children's weekly working hours) and their health outcomes, making use of household survey data from Bangladesh, Brazil and Cambodia. Since the effect of the number of hours worked on health outcomes

depends on the nature of the work, the sector of work is included in the analysis. The research question not only hopes to identify hazardous forms of work in terms of their impact on children's health, but to also provide an empirical basis for recommendations on the maximum permissible working time for adolescents aged 14 to 18 years.

2.2 As regards research methodology, the authors use a Heckmann maximum likelihood estimator (MLE) to identify causal links between the occurrence of injury/illness, hours of work and the sector of employment of the child. The estimator looks first at the probability of occurrence of the injury, then at the seriousness of the injuries/ illnesses suffered, and finally at the relative importance of working hours versus sector of work in determining the level of risk faced by the child. Given a set of controls, an ordered probit model is employed in order to estimate the seriousness of injuries/illnesses as a function of the working hours and sector of employment. A set of iso-risk curves (curves that map combinations of working hours and sectors of employment which generate the same level of risk) is constructed. It should be noted that child work is defined as paid or unpaid work by a child involved in economic activity for family/own final use/consumption during the previous seven days, and that household chores are excluded. Again, the health variable is defined by self-reported health problems and injuries, as these are the only indicators that can be constructed from the datasets considered for the study.¹

2.3 The findings are interesting in terms of shedding light on the correlations between work and ill health. With respect to child age, it is found that work-related ill health decreases with age for all countries except Bangladesh where only marginal differences exist among older children (10-17 years). With respect to the sex of the child, it is found that reported ill health is higher among working boys than working girls in the three countries. The differences are larger in the case of Bangladesh. For the sector of work, it is seen that reported ill health varies significantly by sector. In Brazil and Cambodia, reported ill health is highest in the agriculture sector (where most child workers are concentrated) followed by manufacturing, services and commerce respectively. In Bangladesh, the percentage of children reporting ill health is the highest in the manufacturing sector followed by services, agriculture and commerce sectors respectively. Furthermore, differences exist also with regard to the modality of work. In Brazil, reported ill health is slightly higher in family work compared with non-family work. In Bangladesh reported ill health is much higher in non-family work compared with family work. For Cambodia, it is seen that reported ill health associated with family and non-family work shows almost the same

¹ Due to measurement problems associated with comparing the health status of working and non-working children, the paper focuses only on the subset of children at work in economic activity. Also, the non-availability of panel data does not allow treatment of individual non-observed characteristics such as health endowments. Stronger, healthier children might work longer hours and this might bias the estimates downwards.

occurrence rate but non-family work has a lower incidence density. With regard to workplace safety measures, it is seen in the case of Cambodia that the incidence density of work-related ill health is lower in workplaces where safety measures are in place. Workplace safety measures were not investigated in the Brazil or Bangladesh surveys. Lastly, health insurance too affects the correlation between child work and health outcomes. In Brazil reported work-related ill health is higher in workplaces in which children have access to health insurance, though the difference is not large. Health insurance has not been looked at in Cambodia or Bangladesh.

2.4 Interesting correlations are observed between working hours and the ill health of children. In Brazil, there is a large increase in reported ill health when children move from the 1-10 range to the 11-20 range of weekly working hours. Work in excess of 20 hours, however, does not appear to further affect health. In Cambodia, the health risk associated with work rises significantly moving from the 11-20 hours to the 21-30 hours range, but additional work time beyond 30 hours has little further affect on health. In Bangladesh, reported ill health drops, moving from the 1-10 range to the 11-20 hours range, but then rises for each subsequent hour range.

2.5 Looking at individual characteristics, it is seen that the sex of the child appears to have little effect on the interaction between weekly working hours and ill health. With regard to child age, it is seen that in Brazil, the threshold of hours beyond which work significantly affects health is lower for younger working children. Ill health rises dramatically, moving from the 1-10 to the 11-20 hours range for younger (5-14 year old) working children, while for older (15-17 year old) working children the increase occurs moving from the 11-20 to the 21-30 hours range. In Cambodia, the health risk posed by work increases till the 31-40 hours range for 5-14 year old working children, but it increases only till the 21-30 hours range for 15-17 year old working children. In Bangladesh, the risk of ill health follows a similar path for younger and older working children, decreasing from the 1-10 to the 11-20 weekly working hours range but rising considerably moving from the 11-20 to the 40+ hours range.

2.6 The interaction between work hours and ill health differs by sector. Moreover, the patterns are inconsistent across countries. In the agricultural sector, where most child workers are concentrated, reported ill health rises dramatically moving from the 1-10 to the 11-20 hours range in Brazil and moving from the 11-20 to the 21-30 hours range in Cambodia, before levelling off. In Bangladesh, on the other hand, reported ill health in agriculture falls moving from the 1-10 to the 11-20 hours range and then rises until 31-40 hours range. The link between working hours and ill health is less consistent in other sectors. The health risk posed by work in commerce rises only on moving from the 1-10 to the 11-20 hours range in Brazil but rises on moving across all hour ranges in Cambodia. Ill health associated with work in services more than doubles moving from the 1-10 to the 11-20 hours range in Cambodia, while in Brazil

the health risk associated with service work appears to have little relationship with work hours. Moving from the 1-10 to the 11-20 hours range greatly increases the health risk associated with manufacturing work in Brazil, but there is no clear link between ill health and hours worked in manufacturing in Cambodia.

2.7 Lastly, work modality, too, seems to have an important affect. The relationship between working hours and health also appears to be affected by whether or not work takes place within the family environment. In Brazil, reported ill health due to family work rises significantly moving from the 1-10 to the 11-20 hours threshold but levels off thereafter, while reported ill health due to non-family work increases consistently moving across all hours cohorts. In Cambodia, ill health from family work rises up to the 31-40 hours range, while there is no clear pattern between ill health and hours worked for non-family work. In Bangladesh, there is no clear pattern for either family or non-family work.

2.8 According to the authors, “the implication of these findings² for establishing child labour standards is clear – both working hours and cross-sectoral differences in risk need to be taken into consideration in distinguishing permissible work from child labour. A single universal threshold on hours worked applied across all sectors would be less justifiable, as such a threshold would offer very different levels of protection for working children depending on their sector of work. Cambodian children working up to a universal weekly hours threshold of 14 hours, for example, would face a 49 per cent risk of ill health in the agricultural sector, but only a 33 per cent risk of ill health in the commerce sector. Brazilian children working up to the same threshold would face an 8 per cent risk of injury in the agricultural sector against only a 3 per cent risk of injury in the commerce sector. Sector-specific thresholds for maximum permissible working hours would be needed to help ensure a constant risk level across sectors.” Furthermore, the authors recommend that “in the light of the empirical evidence analyzed, the threshold of 14 hours proposed/adopted by IPEC does not appear far off the mark.”

2.9 A critique of the paper is first, the definitional, data and measurement issues are not addressed, and second, the analysis of the issues and the robustness of and interpretation of estimates. With regard to the former, it is suggested that the definitions need to be tightened and the measurement issues addressed more adequately. With regard to the latter, a number of points are relevant. First, the authors mention having used a Heckman MLE, there is no specification or functional form that is explained explicitly. It is necessary to provide a theoretical justification for the choice of specification in terms of its appropriateness over alternative specification choices. Further, the independent and explanatory variables are not

² Based on quantitative regressions contained in the study.

clearly stated. Second, the authors mention that they re-estimate the variables using a probit model to test for possible misspecification. They find that the coefficients are consistent and from this they conclude that their model is robust. However, this is confusing as the probit model is referred to as the Heckmann probit and again there is no interpretation of the regression model or sufficient explanation of the coefficients. Third, the authors have attempted to do too much; as a result some of the rigour has been compromised. The authors have worked with Heckmann MLE, Heckmann probit, ordered probit, kernel regressions and iso-curves, but there is not much real information emerging from their estimations. The results are rather vague and not properly quantified. In most relationships between variables, some general intuitive direction of change is stated but its size is not. For those cases where quantitative change is cited, no discussion is made of the coefficients being statistically significant. Last but not the least, in paragraph 115, the authors make the statement, “for example, in the case of Cambodia, raising the threshold from 14 hours to 21 hours per week would imply that the percentage of children carrying out permissible work would rise from 38 per cent to 60 per cent”. There is not much explanation as to how the authors arrive at this conclusion.

2.10 Second, the paper by Francavilla, Guarcello and Lyon (2003) uses survey datasets from six countries in an attempt to find a relationship between children’s involvement in household chores and their health. The authors use descriptive statistics as a basis for their analysis of datasets from Guatemala, Zambia, Peru, Guinea, Brazil and Kazakhstan. Health status is measured as incidence of illness and as Body Mass Index (BMI). Furthermore, household chores are defined by a threshold work hour engagement of at least 28 hours per week or at least 4 hours a day.

2.11 The descriptive statistics presented in the paper reveal no clear correlation between household chores and health in the six countries. Children who spend at least four hours on household chores daily are apparently not worse off health-wise than children without household chore responsibilities and children spending more time on chores actually appear better off health-wise than children for whom household chores constitute only a relatively minor burden. Some types of chores appear to have a greater impact on health than others but the variation in reported illness by chore is generally quite small.

2.12 The major limitations of the research and its implications for the paper’s findings are that although well-intentioned, the paper is too simplistic. In trying to determine the correlation between household chores and the health status of children (a) several important definitional and measurement issues are not properly addressed and, (b) it would have made the estimates more robust if multivariate analysis had been done to complement the bivariate analysis done by the paper.

2.13 There are some definitional, data and measurement issues left unaddressed by the paper. For example, the health status is measured as incidence of illness. However, there is no explanation (a) whether the survey collected this as a binary variable (taking value 1/0) where 1 indicates a positive incidence of illness and 0 indicates otherwise, (b) whether the authors themselves constructed this indicator from the variables collected in the survey and (c) whether alternative measures of health such as frequency of illness could have been constructed. Frequency of illness could be defined to take the value 0 denoting no incident of illness during the preceding week, 1 denoting one incident of illness during the preceding week, 2 denoting two incidents of illness during the preceding week and so on, (d) there is no elaboration of what the actual survey question was and (e) there is no elaboration of what constitutes illness.

2.14 Second, although the concept of Body Mass Index (BMI) as an indicator of energy reserves in adults is generally known, the authors ought to have provided a definition of the index for children, the range it can take and its implications. This would have helped put the survey results in context. For instance, according to WHO standards for adults over 20 years old, BMI falls into one of the following categories:

| BMI | Weight Status |
|-------------|----------------------|
| Below 18.5 | Underweight |
| 18.5 - 24.9 | Normal |
| 25.0 - 29.9 | Pre-obese |
| 30.0 - 39.9 | Obese |
| Above 40 | Very obese |

A low BMI—less than 18.5—indicates chronic energy deficiency whereas a BMI of more than 25 is indicative of excess energy reserves (WHO 1995). The paper does not specify the ranges that apply to children.

2.15 Third, the expected or anticipated correlations between hours of household chores and health status need to be explained. For instance, if health status is measured as frequency of illness/incidence of illness then a positive correlation is expected between hours of household chores and frequency of illness/incidence of illness. The empirical correlates may confirm or reject the expected sign of correlation. Similarly, the expected correlations between BMI and hours of household chores need to be explained.

2.16 Fourth, measurement of household chores is defined as at least 28 hours per week of full time household chore. It is not clear who has defined this. Similarly, when the authors first introduce the concept, no theoretical or empirical basis is

provided by the authors for having chosen the threshold of “household chores done for at least 4 hours a day” as a cut-off point. There could have been alternative thresholds and the authors need to explain better why a particular threshold is selected.

2.17 Fifth, in assessing the impact of household chores on child health, the authors express concern over the endogeneity of chores and their influence on health. Since this is not a multivariate or a determinants analysis, the author’s concern is misplaced.

2.18 Sixth, the authors say that the datasets are constrained by a lack of relevant variables whereby the authors’ analysis is limited and new methodological tools need to be explored. This is surprising since data on relevant variables such as study, work, and market work have been collected and are available.

2.19 Seventh, the authors refer to a possible relationship between health and the intensity of household chores. However, no prior definition of intensity is provided. Is intensity being defined as time allocation in the sense that the higher the number of hours spent on household chores the more intense the commitment? Or is it being defined by type of chore?

2.20 Eighth, the authors comment in the concluding section that new measurement tools and new methodological studies are required. These would not, however, appear to be as urgent a concern as collection of relevant variables to facilitate multivariate analysis to enrich the discussion. The relevant variables that could be collected in future surveys are: time allocation between various activities of the child, age disaggregation and various measures of health status.

2.21 Ninth, it needs to be explained which dataset has collected which variables and which dataset has omitted the collection of obvious variables. Descriptive statistics for each dataset would yield the means of variables for which data have been collected. For instance, while data on reported illness have been collected it is hard to believe that data on the type of illness has not been collected. If these variables were collected it would have been possible to link the type of illness to the type of household chore.

2.22 With respect to the analysis of issues, the robustness of the estimates and their interpretation, it is proposed, first, that though the authors have conducted bivariate analysis, they should explore some conditional means and multivariate analysis as well to test the robustness of their estimates. Given that schooling/studying and work variables have been collected, it is possible to undertake an analysis of (a) time allocation between different activities such as household chores, study, work, rest/recreation and (b) the impact of household chores on health conditional on time-

allocated to other activities. If data on time-allocation are not available, then involvement (yes=1/no=2) in other activities may be taken into account.

2.23 Second, the authors have taken 28 hours per week as the threshold for household work. It would be interesting to see how the correlations might change with a different threshold, say, household chores in excess of 35 hours. Such experimentation should be done and its results included in the paper.

2.24 Overall, the paper needs to address some crucial definitional and measurement issues. Besides, even in the bivariate profile framework, the authors need to slice the data in more meaningful ways and work at some conditional means. Furthermore, there is scope for undertaking some multivariate analysis despite the data limitations. This should strengthen the findings and also help assess the robustness of the descriptive statistics.

B. Impact of children's work on their education

2.25 The paper by Canals-Cerda and Ridaó-Cano investigates the effect of work on progress in school by rural Bangladeshi children. The analysis focuses on school and work experiences (up to the end of secondary school) of individuals who were aged 15-25 at the time of the survey, irrespective of whether they lived with their families or on their own. Data for the paper come from the 1996 Matlab Health and Socio-Economic Survey (MHSS) that covered 141 villages of Matlab, a region of rural Bangladesh. The MHSS collected detailed information on the educational history, school entry age, school exit age, grades attended, completed and repeated, for individuals in the relevant age group (15-25 years). The sample size used for the empirical analysis was 2489 individuals (1217 males, 1272 females).

2.26 With regard to the research methodology the authors analyse jointly the dynamics of school and work by specifying a dynamic switching model for the sequence of school and work outcomes for rural Bangladeshi children, up to the end of secondary school. Switching at each school level is determined by the endogenous work history of the child up to that level. The authors explore work and school decisions in a two-stage decision making process. In the first stage, households make the schooling decision conditional on their children's work status and work history up to that period. In the second stage, indirect utilities generated by potential school outcomes defined for each possible work history are compared and the child's working state for that period is chosen.

2.27 The authors find a negative and sizeable effect on school progress for different groups of children. The effect of work is more negative the earlier an individual starts working. The magnitude of the effect of work on progress in school makes policies

aimed at increasing school progress through reduction in child labour most relevant. The policies would be more effective if accompanied by efforts to improve upon the adverse conditions that working children face. More specifically, the authors observe that while the probability of working before school entry increases with age, the probability of entering school is an inverted U-curve. At each school level, the probability of progress in school decreases as the child accumulates additional school delay. In general, for any work history, the observable characteristics that make an individual more likely to work also make him/her less likely to advance in school. Additionally, the observable characteristics that make an individual more likely to succeed at a particular school level also make him/her more likely to succeed at subsequent school levels. This indicates a presence of choice between work and school on the basis of observable characteristics.

2.28 With regard to child characteristics it is observed that delaying school entry age increases the probability of working during school, especially secondary school. However, conditional on work history, the school entry age has a significantly negative effect on the probability of reaching secondary school for those who did not work during primary school, while grade repetition in primary school increases the likelihood of work during secondary school. Moreover, conditional on the work history, grade repetition reduces the probability of completing secondary school, though this is significant only for children who start work while in secondary school.

2.29 The study also reveals that girls are significantly less likely to work at all school levels (except primary school). The gender difference in the propensity to work is particularly strong at the level of secondary school. Moreover, non-working girls are significantly less likely to succeed in school at any school level. Hence, there is a gender gap amongst non-working children. However, this gap disappears for working children after school entry.

2.30 It is notable that the policy of free tuition for girls in secondary school has no effect on the decision to work while in primary school. For children in a working state, the policy has a positive effect on progress in school for boys as well as girls. For children in a non-working state, the policy has a positive effect for both boys and girls but this effect is significant only for girls presumably because the policy of free tuition is targeted at girls. At the same time, if a child was in school after the compulsory schooling law was in place, his or her chance of working during primary school decreased significantly while his/her chance of reaching secondary school increased. This effect is, however, significant only for children in a non-working state.

2.31 With regard to parental and household characteristics, the findings indicate that the father's education significantly reduces a child's chance of working while being in primary school. The education of either parent increases the probability of

entering school and reaching secondary school for all work histories. The mother's educational level, however, has a larger impact on all cases. Moreover, the effect of mother's education is always significant, but the effect of father's education is significant only for non-working children. This differential may suggest that mothers have a higher preference for children's schooling than fathers. Second, household wealth, indicated by the ownership of a modern latrine, reduces the probability of children's work while in primary school and increases the probability of their progress in school for any work history. Controlling for farm ownership, the probability of work is greater in households that cultivate land. Third, the number of older siblings has a negative effect on work, but this effect is significant only at the secondary school level. Again, the number of younger siblings increases the probability of work before school entry, but lowers the probability of work at the secondary school level.

2.32 With regard to village characteristics the main findings are: first, while the presence of primary school in the village has no significant effect on work or on progress in school of children, the presence of a secondary school in the village has a significant effect on their work or school progress. Second, the presence of health-related infrastructure in the village has a significant negative effect on work at the secondary level but a significant positive effect on work at the primary level. Third, a more diversified village economy has no significant effect on work but it does have a consistently positive effect on schooling at all three schooling levels. Fourth, the capital of Matlab provides access to credit institutions, health services, employment opportunities and schools. Therefore villages further away from the capital are found to have a higher incidence of child work at primary level and consistently lower school transition and completion rates.

2.33 Finally, the paper also incorporates policy simulations. Their implications are: first, any assessment of policies to reduce children's work while in primary or secondary school must be based on a full understanding of the nature of the selection process across the school transitions. Second, the magnitude of the effect of work on school progress makes policies aimed at increasing progress through reductions in child work most relevant. Third, the effectiveness of these policies will be greatly increased if they are accompanied by efforts to improve the adverse environment facing working children. Overall, the paper is technically sound and a number of relevant policy issues have been explored.

2.34 The paper by Ray and Lancaster (2005) attempts to answer the question whether there exists a threshold of (weekly) hours of work for 12-14 year olds below which school attendance and performance are not adversely affected. This is a relevant policy question to examine as the authors point out that Article 7 of ILO's Minimum Age Convention, 1973 (No. 138), stipulates that light work may be permitted for children from the age of 12 or 13 provided it does not "prejudice their

attendance at school ... or their capacity to benefit from the instruction received”. With regard to the paper’s research methodology, the empirical analysis is based on child labour data sets collected in 7 countries (Belize, Cambodia, Namibia, Panama, Philippines, Portugal and Sri Lanka) by SIMPOC.

2.35 The authors construct a ‘schooling for age’ (SAGE) variable which measures schooling attainment relative to age. The econometric model in the paper is based on a 3-part estimation methodology. First, a multinomial logit model is used to estimate the determinants of a child’s participation in schooling and/or employment. Second, a single equation estimation is used to examine the impact of child labour hours on child schooling. An instrumental variable (IV) estimation methodology is employed to control for the potential endogeneity of child labour hours as a regressor. Third, a systems equation based on a 3-stage least squares estimation model is applied which recognizes the simultaneity in decisions on the child’s schooling and labour hours.

2.36 The main finding from the research is a correlation between school attendance rates and weekly hours of work. Evidence suggests that work hours adversely affect both school enrolment rates and the school outcome variable, SAGE. In terms of econometric estimates, the model shows that for 5 of the 7 countries (Belize, Cambodia, Panama, Philippines and Portugal) there is a statistically significant negative coefficient between learning measure and work hours, thus confirming that “work hours adversely affect both school enrolment (that is, the probability of the child attending school) and the school outcome variables – from the very first hour of work.” However, in terms of the non-linear determinant of work hours (that is, the work hours squared variable), the estimated positive coefficients for the same five countries suggest that the adverse marginal impact of child labour hours on schooling variables weakens as the labour hours increase. This points to a U-shaped relationship between schooling and child labour hours. The IV regressions concur that beyond 5 hours a day (30 hours per week) the marginal impact changes direction, that is, child labour hours positively impact school enrolment and the measures of school outcome.

2.37 A significant exception to this pattern shows up in the Sri Lankan results, which show an inverted U-shaped relationship between schooling and labour hours. A small amount of work is actually quite beneficial to learning in Sri Lanka. This holds true for both boys and girls. The SAGE estimates for Sri Lanka imply that the turning point at which a child’s work starts to negatively impact on a child’s learning is 18.785 labour hours per week for boys and 14.167 labour hours per week for girls. The fact that a sizeable section of the Sri Lankan child labour force works less than 17.85 hours a week, the turning point implied by the SAGE regression estimates for all children in Sri Lanka, suggests that child labour is less destructive of children’s development in Sri Lanka than in other countries. One possible explanation is that relatively few Sri Lankan children are in the work only category than in the other

developing countries. Indeed, a greater percentage of the child population in Sri Lanka combines schooling with employment than in most developing countries. At moderate levels of work hours, this helps to offset the harmful effects of child labour. The authors agree that this finding merits further investigation because of its significant policy interest.

2.38 One result on which all the data sets concur is the strong positive role that the level of adult education in the household plays in keeping the child enrolled in school and in improving his/her learning experience. In addition, attention may be drawn to 4 noteworthy results. First, *ceteris paribus*, boys in Cambodia and Sri Lanka complete significantly fewer years of schooling than girls (on the age-corrected measure of schooling). By contrast, no such differential exists in Belize or Panama. Second, the exercise confirms that Sri Lanka is the only country where child work hours initially have a positive impact on child learning. Unlike in other countries, the turning point for Sri Lanka (13.55 weekly hours) presents more than mere academic interest since a significant number of child workers work in the range of 0-15 weekly hours. Thus, a much greater percentage of child workers in Sri Lanka is in the rising segment of the relationship between child learning and labour hours than in the other countries.

2.39 However, Sri Lanka falls in line with the others once we correct for the truncation of child work at zero. This is a very important point because the authors estimate the relationship between child labour hours and schooling using a Tobit specification that has the feature that zero values are not suppressed. In other words, data with zero values or zero hours of child labour in this context are not censored. Once the authors correct for this, their finding changes and the inverted U-shaped relationship between child schooling and child labour is replaced with a monotonically decreasing relationship. In other words, the limited support that the Sri Lankan evidence seemed to provide for Article 7 of ILO Convention No. 138, disappears with the Tobit estimation of child labour hours. The appropriate choice of specification (Tobit in this case) recognizes the harmful effect of child labour on the child's education and confirms our intuitive hypothesis that the appropriate choice for the hours-of-work threshold is zero.

2.40 In contrast to the figures for economic activity, hours spent by the child on domestic duties impact negatively on learning in Sri Lanka but less significantly elsewhere. In addition, the results generally confirm that rising levels of adult education promote child welfare by reducing children's hours of work and by increasing the SAGE measure of school outcome. In all 4 countries, adult female education levels have a stronger positive impact on child learning than do adult male education levels.

2.41 Furthermore, the authors perform OLS regressions for each occupational category: (i) service, shop and market sales workers; (ii) craft and related workers; (iii) sales and services workers in elementary occupations; and (iv) agricultural workers. OLS estimations of the regressions of SAGE (a measure of learning output) and study time (a measure of learning input) are also derived, and interaction terms between the four occupational dummies and labour hours and labour hours square variables are introduced. The findings are that for three of the four occupational categories, neither work hours nor work hours square have a significant impact on the schooling measure, SAGE. For the case of agricultural workers the impact is significantly positive and since this category accounts for nearly 20 per cent of all the children in the 12-14 year age group, it explains the positive coefficient estimate of the work hours variable found in the aggregate estimations reported earlier. The negative coefficient estimates of the interaction terms between the labour hours square variable and the occupational dummies (from the estimation on the pooled data) show that a heavy workload does eventually have an adverse effect on the schooling of children for all of the occupational categories. The occupationally disaggregated estimates suggest that light work defined as child work that does not negatively impact on the child's "capacity to benefit from the instruction received" as stipulated in ILO Convention No. 138, should mean a maximum work load of 10.54 hours per week for service workers and shop and market sales workers and 10.88 hours per week for agricultural workers. These cut-off points are somewhat lower than those suggested by the IV estimates based on aggregate Sri Lankan data that ignored inter-occupational differences.

2.42 The authors note in their conclusion that the finding of a negative impact of child work on learning is remarkably robust to the data set, to the use of weights in the data, to the sex of the child and to the estimation procedure adopted. On the latter point, recognition of the possibility that a child's school performance affects his/her labour market involvement seems to worsen the estimated impact of child work on human capital formation. The sex-disaggregated estimates, though there are some exceptions, suggest that the marginal impact of child work is more detrimental to the learning experience of girls than to that of boys.

2.43 The main limitations of the paper are that it does not distinguish between hazardous and non-hazardous child labour or between children in the worst forms of child labour and other child labourers. Moreover, child labour can have adverse consequences for a child's health or development in addition to educational attendance. Last, but not the least, this study has focused on educational *attendance* and not looked into educational *performance* for determining light work by children. Nevertheless, the central message that children's work even in limited amounts does adversely affect child learning is convincingly made. This adverse effect is reflected in reduced school attendance rates and in a shorter duration of schooling.

2.44 The paper by Ersado (2002) postulates that while child labour is widespread in developing countries its causes are debatable. Poverty is considered the primary reason, but many theoretical and empirical analyses show that other factors, such as lack of access to credit, poor school quality and labour market opportunities play equal or even greater roles in the decision to make children work. This study surveys the existing literature on child labour and its causes and, taking into account urban-rural divides, aims to shed light on the debate with empirical evidence from Nepal, Peru and Zimbabwe.

2.45 With regard to data, the paper uses nationally representative household surveys from Nepal, Peru and Zimbabwe. The data is from the 1990/91 Zimbabwe Income Expenditure Consumption Survey (ZICES), the 1994 Peru Living Standards Measurement Survey (PLSS) and the 1995 Nepal Living Standards Survey (NLSS). The respective governments and the World Bank conducted the PLSS and NLSS surveys jointly as part of the LSMS carried out in a number of developing countries, while the Central Statistical Office of Zimbabwe was responsible for conducting the ZICES. Since these three surveys are nationally representative, they lend themselves for a comparison of individual-, household-, and community-level characteristics. The PLSS covers about 3,623 households; the NPLSS, 3,373 households and the ZICES over 14,000 households. The Nepal and Zimbabwe surveys report child schooling and employment data for 3,617 and 15,467 children ages 10-17, respectively. The Peru sample contains child labour and child schooling information for 5,191 children ages 6-17. These large-scale household surveys provide information on children who work or do not work and those who attend or do not attend school, thus providing a model of child labour and schooling decisions.

2.46 With regard to the research methodology the paper studies the case in which child labour and schooling decisions are an outcome of unitary household decision-making process. A unitary model is relevant since decisions about child labour-force participation and hours of work, leisure and schooling are typically made by an adult, not by the children themselves. In unitary neoclassical household labour supply models, the family is assumed to make a joint decision regarding household consumption and labour supply of its members. The decision is guided by utility maximization determined by household consumption and leisure of household members, under household budgetary constraints.

2.47 The model assumes the decision maker will maximize household welfare, subject to a budget constraint and child time-constraints that mainly constitute time allocation decisions. In a typical developing country, child time may be allocated to three broad activities: schooling, paid labour, and leisure, including unpaid household domestic work. Maximizing household welfare subject to budgetary and time

constraints implies that a parent's decision on child schooling or work depends on the market price for a composite consumption good; wage rates for children, unskilled and skilled labour; household asset holding and non-wage income. Child labour is defined here as hours in both wage and non-wage activities, as reported by the multipurpose, countrywide household surveys. Relying on hours of wage work, as Killingsworth and Heckman (1986) claim, is likely to yield estimates that reflect substitution away from work at home as well as leisure.

2.48 The explanatory variables include measures of labour market conditions, poverty, credit access, school availability and cost and variables accounting for household domestic responsibilities. Child- and adult-labour market conditions are measured by average wages paid per hour at the community level, not wage rates derived at the individual level. Community-level average wages provide a better description of prevailing labour market conditions than individual-level wages and they are based on wages reported by individuals who actually work. Adult female and male wage variables are included separately to capture the differential impact of both women and men's incomes on work and schooling decisions for their children. Explicit inclusion of separate wage educational-level variables for men and women relaxes the unitary modelling assumption and reflects differences in preference and bargaining power between mother and father. Standard variables such as the parent's educational level, age and sex, are among the explanatory variables. Also included is a measure of domestic responsibility in terms of the number of very young children in the household. Some school-related variables at the community level, such as the number of schools available and the cost of schooling per pupil are included. Finally, in accordance with the theoretical model, the household-level poverty measure is based on non-wage income from various sources, such as profits from self-employment in farming and non-farming activities, interest from household assets and other non-labour income sources. This measure takes into account the inter-temporal nature of child schooling and work decisions.

2.49 An important finding of the paper is that all country results indicate child schooling is negatively associated with age and female gender, as girls and older children's school attendance rates are significantly lower than those for boys and younger children. Correspondingly, the probability of being employed rises significantly with age in all three countries. The likelihood of employment increases for girls in Nepal and Zimbabwe, but in rural Peru, boys tend to have higher propensities for employment.

2.50 Second, while poverty reduces the probability of child schooling, it increases the probability of child employment and intensity of work significantly. Results show that if a Nepalese household had its non-labour assets increased by 100 rupees, it would decrease child labour hours by about 5.76 hours per week. Zimbabwean

households would decrease child work hours by about 4.90 hours per week if there were a temporary positive shock (an increase of 100 Zimbabwe dollars) that would make liquidity constraints less binding. In annual terms, these are significant reductions in child labour hours.

2.51 Third, the educational levels of both the highest educated man and woman in the family significantly improve child education and decrease the likelihood of employment and intensity of work in all three countries. This finding reinforces the universally accepted notion that parental education is the most consistent determinant of child education and employment decisions.

2.52 Fourth, rural infrastructure and school-related community-level variables significantly affect schooling and work decisions in all countries. Higher average educational expenses at the community level appear to improve school enrolment rates and correspondingly decrease child employment and intensity of work in rural Nepal and Zimbabwe. Similarly a higher number of schools in a given community lead to higher enrolment and lower employment rates and work hours per week in Nepal. Thus, to the extent that the number of schools and school-related expenditures in terms of tuition, books, teacher salaries and students per teacher are indicators of school accessibility and quality, improving the availability of good schools could lead to less child labour and more child schooling.

2.53 Fifth, in rural Nepal and Zimbabwe, access to a commercial bank has a positive effect on schooling and a negative impact on employment. Credit access appears to have a higher negative effect on employment than its corresponding positive effect on schooling. This may imply that credit is sought more to smooth consumption risks and other household needs and less to meet child schooling purposes. Rural credit needs are driven by incidental risks and for temporary shocks, more so than a long-term goal of child schooling. This may imply that in the absence of such credit schemes, child labour may become part of a strategy to minimize the risk of an interruption of the income stream, for example, a risk of a failed harvest.

2.54 The paper argues that unlike in rural areas, poverty is not a good determinant of schooling and work decisions in urban areas. Again, similar to rural cases, it is clear that in urban areas, older children are less likely to go to school and girls are less likely to stay in school than boys in all three countries. The impact of gender on employment is mixed in urban areas: boys (girls) are more likely to be employed in Peru (Zimbabwe) and gender is insignificant in urban Nepal. In addition, it is observed that improved child labour markets provide strong incentives for child employment in urban Peru. The Peruvian result is comparable with findings in other Latin American countries that suggest improved market conditions drive child labour.

Peru among all three countries examined in this paper, has the largest proportion of children who are both working and going to school at the same time. The fact that the child wage is positively associated with the employment decision may imply that some children work for the purpose of meeting educational expenses. The number of hours children work also increases significantly with child labour wages in urban areas of Peru and Zimbabwe.

2.55 Sufficient evidence (from urban areas of all three countries) is not available to support Basu and Van's (1998) luxury axiom that poverty drives child labour. Similar analysis done separately for boys and girls by Ray (2000a) also shows no evidence for the luxury axiom in Peru. Although the theoretical literature on child labour such as the seminal paper by Basu and Van (1998) tends to lead many to believe that poverty is the primary cause of child employment, this result leads one to believe that poverty is apparently not the main culprit in determining child labour in urban areas.

2.56 What is interesting is that in urban areas, the measure of domestic responsibility (number of young children under age five) plays a critical role by keeping children away from school and forcing them into work. This result is contrary to the result for rural areas that showed an insignificant impact for the number of young children in the household. There is also a positive likelihood that when a mother works outside the home, she will drive child employment decisions in all countries. This urban-rural differential in the impact of domestic responsibilities may be due to the availability of an extended family and kin members to help in child-caring activities in rural areas more so than in urban areas. Urban infrastructure and school-related community-level variables do not factor in schooling and work decisions in urban Nepal and Zimbabwe, unlike in the rural areas. However, in urban Peru, educational expenses at the community level appear to improve child school enrolment rates.

2.57 The main policy conclusions are that while poverty drives child work and schooling in rural areas, it does not appear to significantly influence such decisions in urban areas. This suggests that policies such as trade sanctions or a ban on child labour in rural areas could have an adverse effect as child labour decisions in such areas are more likely a response to poverty and subsistence requirements. Similarly, improving access to credit has greater potential for alleviating child labour and enhancing school enrolment in rural than in urban areas, particularly in Nepal and Zimbabwe. On the other hand, the availability of alternative childcare options appears to considerably decrease child labour and create conditions for higher school attendance rates in urban than in rural areas. Finally, evidence from all three countries indicates that efforts to bolster adult educational levels and wages will help curb the prevalence and intensity of child labour and improve the likelihood that children will stay in school.

2.58 The paper by Deb and Rosati (2002) models household-level heterogeneity in income and access to credit and their effects on child labour supply. The authors are able to quantify the relative importance of ‘observed’ household heterogeneity, especially as it relates to differences in income, assets and wealth, and ‘unobserved’ household heterogeneity that is likely to include important components of costs of education, returns to education and work. The standard conceptual framework is extended to include the possibility of children being idle, that is, neither working nor attending school. This is a novel approach as much of the literature on determinants of child labour does not distinguish between non-work alternatives, often treating school attendance as the only alternative to work.

2.59 Data from two large household surveys are analysed by the authors to study the importance of household-level observed and unobserved characteristics. The first sample consists of data from the Core Welfare Indicators Questionnaire (CWIQ) Survey conducted in Ghana in 1997 based on 13,484 children between the ages of six and 15 in 6701 households with at least one parent present. Both parents were present in 73.3 per cent of the cases. The mother of the child alone is present in 23.3 per cent of cases while the father of the child alone is present in the remaining 3.4 per cent of cases. The second sample consists of data from the Human Development of India Survey (HDIS) conducted in rural India in 1994 and is of 34,211 children between the ages of 6 and 15 in 16,371 households. The data show that in Ghana, 78 per cent of children are in school, less than 8 per cent of children work and 14 per cent of children are idle. In India school enrolment is about 64 per cent, while about 13 per cent of children work and 23 per cent of children are idle.

2.60 The authors have described in some detail the theoretical and empirical models in the paper. In these models the dependent variable is defined using three mutually exclusive categories to identify children’s activities: school, work and idleness. The independent variables include: individual characteristics such as age and gender (female). Resources available to the household are proxied by a dummy variable for the household being poor, that is, belonging to the lowest income quintile, and by a variable which measures the number of appliances in the household. Returns to work are denoted by two variables which indicate whether the household owns land and livestock. Children’s wages are not considered a variable as only a few children in the sample worked for a wage. The education of the parents is included in the models. In the sample from Ghana, education is measured in terms of the number of years of schooling. In the sample from India, education is an ordered variable with increments denoting substantive increases in education (from primary to lower secondary to higher secondary). Other household characteristics are the number of children, religion (Hindu, Muslim, Christian) and social status in the case of India. Costs of primary and secondary education are reflected by the distance of primary and

secondary schools in Ghana and by dummy variables indicating the presence of primary and secondary schools in the village for India. In the case of Ghana, a dummy variable for the urban location of the household is included and all models include a set of regional fixed effects: 9 regions in Ghana and 15 states in India.

2.61 The parameter estimates show that being poor increases the probability of working and decreases the probability of attending school. The proxy variable for pure wealth effects, that is, appliances, has the expected effect on the decisions concerning child labour and schooling which is that children in wealthier households are more likely to attend school and less likely to work. Land and livestock ownership have negative effects on the probability of attending school, but these effects are statistically significant only in the case of India.

2.62 Girls are less likely to attend school and more likely to be idle. In Ghana, girls are no more likely to work than boys while in India, girls are more likely to work. Older children are more likely to attend school and work and are less likely to be idle but in each case the effect is nonlinear. The presence of siblings reduces the probability of attending school and raises that of working and especially of being idle. Children with more educated parents are more likely to attend school and less likely to work or be idle. The further the school (especially primary school in the case of Ghana), the less likely children are to attend school and more likely to be idle, indicating that it represents a significant component of the cost of education. Interestingly, distance from school has little or no affect on the probability of working.

2.63 The authors draw attention to the interesting result that “overall, the marginal impacts of most covariates on being idle are statistically significant and large. Importantly, much of the substitution between activities as a response to changes in explanatory variables is between attending school and being idle. The effects of these exogenous covariates on work are substantially smaller. These results highlight the importance of treating idleness as a distinct category of activity and point at the possibility of unintended consequences when policies are based on a framework in which school and work are the only activity choices.”

2.64 It should be noted that the paper is not wholly convincing. The authors strive to build a highly technical specification to model observable versus unobservable heterogeneity and its implications for child labour. However, they have not adequately simplified the technicalities to make it accessible for a non-technical audience. For example, the authors characterize households into four latent types that are supposed to reveal different intrinsic propensities for children’s activities. But the authors do not explain what the four latent types of characterizations mean in practical

terms beyond stating that “once classified, latent classes or types may be related to group characteristics.”

2.65 Similarly, reporting on the results, the authors state: “households in Class 4 are most common” without any explanation on its meaning. Later, the authors rather casually describe latent Class 1 households as having a high intrinsic propensity towards child labour. Households in the Class 2 category almost always send their children to school. Class 3 consists of households whose children are most likely to be idle, with school being the second most likely activity. For example, the authors state that “selecting a model with an appropriate number of support points is essential (page 7)” but again there is no explanation as to the meaning of support points and its implication for parameter estimates.

2.66 The authors outline the implications of their econometric estimates for policy purposes but they are rather unspecific. For instance, their first recommendation is that research and policy design should be reoriented towards gathering household-level determinants of child labour besides income. To achieve this aim, they suggest that it might be necessary to modify survey instruments currently utilized to gather information on child labour. However, the precise modifications which might be considered for improvement of data-collection are not specified.

2.67 Their second observation is that since the model results partially reject the poverty axiom the inference is that “it may be possible to reduce child labour without relying only on income growth. This offers support to the plans developed and/or under consideration by many governments and international agencies aiming at eradicating the worst forms of child labour.” Here too, alternatives to income support strategies (whether via economic growth, expansion of livelihood strategies or widening of income earning opportunities) are not offered.

2.68 The authors do, however, emphasize that the phenomenon of children who neither work nor attend school warrant considerably greater attention in theoretical and empirical work on children’s activities as well as in survey design. They are clearly a vulnerable group and may be worse off in a human capital sense than children who work.

C. Impact of child labour on children’s well being

2.69 In this sub-section, the paper by Basu and Tzannatos (2003) which surveys the large and rapidly growing literature on the subject of child labour, but focuses primarily on the new literature which uses the best of modern economic theory and econometrics is reviewed. It is argued in this paper that in crafting policy for mitigating the enormous problem of child labour, it is important to acquire a proper theoretical and empirical understanding of the phenomenon. What gives rise to child labour and

what are its consequences? What are the interventions that we can think of in order to end child labour without harming children? A well-meaning but poorly designed policy could actually exacerbate the poverty that these working children face and may even bring them to the brink of starvation. The authors discuss the main policy implications of these new findings and hope that this will contribute to better-informed discussion and policy design in this area.

2.70 In reviewing the existing literature on the determinants and consequences of child labour, the authors find that while poverty is a determinant of child labour, “this axiom that poverty causes child labour has not gone unquestioned.” Basu *et al* find that there are “empirical studies (for example, Ray, 2000a, in his study of Pakistan) that have failed to find a positive relation between poverty and child labour. But it is arguable that the income that a *household* targets as minimum acceptable may not coincide with the nation’s or region’s *official poverty line*. So, if the head-count ratio based on the official poverty line to measure poverty is used, this may not explain the incidence of child labour.”

2.71 Another critique of poverty-based explanations of child labour has come from Bhalotra and Heady (2002), who have tried to show, using data from Pakistan and Ghana, that households which own (or operate) relatively large amounts of land tend to make their children work more. Since a larger landholding would typically mean greater wealth, this seems to suggest that greater poverty does not lead to greater child labour. The main reason why greater land ownership may contribute to higher child labour is, as Bhalotra and Heady recognize, that in the absence of a properly functioning labour market, owning or controlling land amounts to having the opportunity for more productive use of the household’s labour, including child labour. Hence, if two households are equally disinclined to send their children to work but one has more land, then that household may choose to make the children work simply because that household finds it more rewarding to make children work. So, it is not surprising that at the margin, land-ownership makes a difference.

2.72 It is interesting to note that Edmonds and Turk (2002) find something similar for the case of Viet Nam. Households that start their own business are more likely to send their children to work. The reason must be the same, that is, a household that starts its own business is like a household with a lot of land. It has greater opportunity to use its own labour more productively. This does not mean that poverty is not a determinant of child labour, but simply that child labour, like all other inputs, responds to incentives and opportunities. Basu *et al* hypothesize that if there were sufficiently disaggregated data for households, ranging from those that own no land to those that have very large quantities of land, they would find a non-linear relation with child labour first rising as land ownership rose and eventually falling. The latter

would be because, beyond a point, the wealth of the household would become the dominant factor, causing child labour to decline.

2.73 The authors also explore the link between child labour and human capital formation and the inter-generational dynamics of child labour. Does child labour hurt education and the acquisition of human capital? The existing literature seems to support the view that, though *some* work may be helpful in augmenting human capital, by teaching children the skills and attitudes needed to work as well as adults and enabling them to earn the money that is needed to go to school (French, 2002; Psacharopoulos, 1997), in general child labour impedes the acquisition of education and human capital by causing a loss of education *and* through other channels such as damaging their health or adversely affecting attitudes.

2.74 An intriguing relationship between child labour and education occurs across siblings. Though for a particular child (barring small exceptions) work often cuts into education, across siblings in poor families, work and education often seem to go together. Thus, one child's labour may make it possible for another child to go to school (Morduch, 2000). While this phenomenon of sibling complementarity is, at one level, quite obvious, it has not received enough attention in this literature. An exception is the paper by Emerson and Souza (2002b) which analyzes Brazil's 1998 PNAD data and establishes systematic relationships between birth-order, on the one hand, and propensity to go to school and work, on the other. The authors show that the last-born male child is less likely to work than his other siblings. This seems to be universal. Almost as widespread is the fact that the first-born female child is less likely to attend school than others. Of course, this sibling complementarity will show up in households that are moderately poor, since in rich households typically all children will be out of work and in school and in very poor households it will be the reverse. What the fact of sibling complementarity suggests is that in these moderately poor households some children are kept away from school (and sent to work or made to look after the household) in order to enable other children to go to school. This fact will have important moral and policy implications, especially since birth-order also seems to be tied to gender with the girl child often being used to enable the younger male sibling to go to school. It is not possible to say much more than this, since not much is known. But the authors have flagged this topic as an important one deserving further research and attention.

2.75 With regard to inter-generational dynamics, it is known and documented that poverty transmits from one generation to another and this has been the case through the ages (Horrell, Humphries and Voth, 2001). What the authors show in addition is that adverse shocks not only leave families worse off but can affect adversely the formation of human capital among the descendants of the family. Wahba (2002) analyses the 1988 Labour Force Sample Survey of Egypt, which involves a nationally

representative sample of 10,000 households. Her analysis is based on 10,742 children in the age group 6 to 14 years for whom full information on schooling work and parental characteristics are available. It is worth noting as a digression that she finds strong support of the axiom that it is hardship that makes parents send their children to work. She finds that a 10 per cent rise in the market wage rate for illiterate men results in a decrease in the probability of child labour by 22 per cent for boys and 13 per cent for girls.

2.76 Wahba develops a bivariate probit model, allowing for the decision regarding schooling and work to be simultaneous and interdependent. She finds that a parent who was a child labourer has a higher probability of his or her child being a labourer. The probability of a boy working rises by 10 per cent if the boy's mother worked as a child and by 5 per cent if the boy's father worked as a child. The same phenomenon has been modeled and empirically tested by Emerson and Souza (2002) using PNAD data for Brazil. The authors go on to ask a further question: if a person works as a child, would this result in an increase in the probability of his or her child working by more than can be explained by the fact that the person will be poor as an adult (by virtue of having been a child worker) and therefore compelled to send the child to work? The answer is yes. Hence, they surmise the presence of social factors, which cause the perpetuation of child labour through non-income channels. It is, for instance, possible that having been a child labourer oneself affects ones social norms and attitude to child labour (Basu, 1999; Lopez-Calva, 2003) such that one is more likely to send ones own child to work.

2.77 The authors offer two caveats to the empirical results cited earlier that should reduce the confidence with which such a generalization can be applied to policies. First, the empirical literature on child labour is relatively young. As a result, many studies (some quoted in this paper) report results that should at best be treated as preliminary. This can be corrected in the course of time but some generic problems endemic to economic and social research may persist well into the future. Second, cross-section estimates may omit to capture important lifecycle effects and, more generally, estimates can be affected by endogeneity or identification problems. Moreover, studies which include the occupations of adults, land ownership or other income variables as explanatory variables may be affected by multi-collinearity.

2.78 The results for control variables (such as household size, relationship of child to household head, age of child, birth order of children) may be similarly affected. Omission of some variables from the estimation (simply because data are lacking) may also give rise to biases. Since many studies examine simultaneously the relationship between child labour and education, there can be unobserved heterogeneity (for example, in the academic ability of children or health/disability) that can be further conflated by the inclusion of parental education (a measure of

tastes) or nonlinearities in the returns to education. Regional effects, community infrastructure (measured by availability of water, electricity and transportation), and local unemployment rates can render the results of different studies even in the same country and year non-comparable. There are often disequilibrium effects (such as migration) that evade researchers. The use of dummies in estimation poses additional complications, as do non-economic variables (such as social norms) which can be reflected by various proxies, or altogether omitted from the estimation.

2.79 In terms of implications for policy, Basu *et al* are of the view that government intervention for controlling child labour is both desirable and possible. They recognize that such policies should be crafted which recognize the powerful market forces that give rise to child labour in the first place, as a result of which the incidence of child labour will no doubt respond to intervention. They also caution of the many pitfalls and risks of backlash that can occur in the complex interaction between household economics and market structures. Finally, the authors emphasize that their view of policy is child-centric. Any policy in the area of child labour (including the decision to do nothing) must be justified primarily in the interests of the children. In other words, they are not interested in arguments such as: “Policy X concerning child labour will leave children worse off, but is justified in the interest of helping boost the country’s exports and through that it’s GNP”.

2.80 The policy interventions offered can be divided into two kinds, namely, collaborative measures and coercive measures. Collaborative measures are, broadly speaking, interventions which alter the economic environment of the decision makers, making them more willing to let children stay away from labour and spend more time on other activities especially, schooling. Thus, a policy that improves the functioning of adult labour markets so that adult incomes rise and unemployment falls, is always desirable from the point of view of curtailing child labour. Given that parents typically want to keep children away from work and in school, if they find that they have enough income of their own so as to render child labour unnecessary they will themselves withdraw children from work and put them in school.

2.81 Does this mean that giving unconditional income subsidies to poor households will curtail child labour? Though the authors feel that the answer will generally be yes, one has to be careful in that it has already been seen as possible that such subsidies will be used to buy land or other businesses and this, in turn, could increase child labour by creating an easy productive environment for employing children. Closely related to this is the policy of improving credit and insurance markets, so that adults in bad times can borrow money on decent terms and do not need to take their children out of schools and send them to work to help the household ride over the rough patch. The link between credit markets and child labour has been noted in the literature (Baland and Robinson, 2000; Ranjan, 2001).

2.82 By far the most direct collaborative measures are the ones which reward children who go to school instead of work. Around the world many such interventions have been tried and there is now a small body of empirical literature studying these programmes. *Bolsa Escola* in Brazil, *Progresas* in Mexico, *Red de Protection Social* (RPS) in Nicaragua, Food for Education Programme in Bangladesh (Ravallion and Wodon, 2000), mid-day meal schemes in India (Dreze and Kingdon, 1999), the school construction programs in Indonesia (Duflo, 2000) and the “back to school” measures aimed at preventing an increase in child labour and sustaining school enrolments in Indonesia after the financial crisis, are all examples of policy intervention which provide incentives for parents to send their children to school.

2.83 Most of these programmes find that schooling does in reality respond to such incentives. Dreze and Kingdon find that female school participation is 15 per cent higher when the local school provides a mid-day meal. They find that girls schooling responds more to such incentives than boys schooling. This is important since a special effort is needed to keep girls away from work which though often invisible could add up to more than what boys do. Mexico’s *Progresas* now extends to approximately 40 per cent of all rural families as beneficiaries and can provide large incentives to schooling (including required medical tests and nutritional programs). In poor areas, the grant that the mother receives if her daughter is enrolled in the 9th grade is 255 pesos per month, which is 44 per cent of an average male day labourer’s wage or about two third of what a child of this age would earn if she worked full time. Schultz (2001) finds that the programme’s net effect on enrolment is positive and statistically significant. Skoufias and Parker (2003) estimate that the labour force participation of children aged 12 to 15 years is reduced by 15-25 per cent relative to the probability of participating prior to the programme and that children are much more likely to attend school and to spend more time on school activities. The estimated increase in the educational attainment of children dominates the enrolment gains from increased provision of schools. The above are essentially collaborative measures and do not require coercion, or even any legislative backup.

2.84 Coercive measures have been very hotly debated in international fora and policies such as having a social clause which would enable the WTO to take punitive action against a country that has child labour have been proposed by many. What position does one take on such coercive measures? Unfortunately, there is not enough relevant empirical work. But these are important matters that cannot be ignored. The authors argue that coercive measures also have their role but need to be used much more carefully than collaborative policies. First of all, hazardous labour ought to be legally banned. It is true that this may cause other forms of hardship to some very poor families in the short run, but to allow for such labour to directly hurt children, who or whose parents often cannot properly assess the long-run damage that such labour can do to them, makes little sense. Even for non-hazardous labour there may be

scope for using legislative bans. This is typically closely associated with the theory of multiple equilibria. We have seen above that in static and dynamic models we may often have multiple equilibria with children typically doing better in the equilibrium in which children do not work or do very little work. Should there be such multiple equilibria in an economy, with the economy settled in a situation with high child labour, a legislative ban would raise the economy to a higher equilibrium and may be justified on that ground. Such action, however, needs to be preceded by careful empirical evaluation of the situation, since, if there are no multiple equilibria, then such a law can exacerbate the suffering of the children. For one, it can deprive children from work which was essential for their survival. If the law is effective only in some sectors, it can drive child labour underground, to sectors that may be more harmful for the children. And finally, note that such laws are typically implemented by imposing a fine on the employer, who employs children in violation of the law.

2.85 That is exactly how India's Child Labour Deterrence Act, 1986, works. It empowers the state to impose a fine on firms that violate the law by employing children in activities that are not allowed. Such laws can, ironically, have the effect of raising the amount of child labour. The reason is easy to see. By making the employment of children more costly to firms, such a law ensures that the actual child wage will now be lower (for otherwise it would not be worthwhile for firms to employ children). Indeed, the lower wages would mean that children have to work longer hours, and often harder, to reach a targeted income. Hence, the slapping of a small fine can have the opposite effect of what is intended.

2.86 Partial measures are generally a bad idea when we think of global action to deter child labour. This is part of the larger debate on international labour standards. The two major problems that have concerned economists are, first, once an instrument of global action is created to thwart the flow of goods from nations that violate minimal labour standards, this will be used for protectionism by the industrialized nations (Bhagwati, 1995; Srinivasan, 1996), and second, international action to stop child labour inputs into traded goods will simply drive children into the non-traded sector and this may be worse for them (Fallon and Tzannatos, 1998).

2.87 Conversely, there is evidence that market integration may lead to less child labour. Edmonds and Pavcnik (2002) find that opening up the Vietnamese economy resulted in the rice price to rise and this caused child labour to decline. Hence, while there is scope for coordinated action among developing countries to raise labour standards (so as to discourage international capital from fleeing from one country to another), one must be wary of policies that use punitive action, like trade sanctions, to enforce labour standards. It is not surprising that there is no one simple policy measure to eradicate child labour. Its persistence through two centuries is strong testimony that there is no easy solution. Yet, an improved understanding of the causes

underlying child labour may provide the opportunity to craft policies that can sharply reduce and ultimately eradicate it.

3. The major findings on linkages between child activities and health/ education/ well-being

3.1 While the different studies have explored the links between child labour, health and education, and while different definitions have been employed to measure health or education status, there seems to be a degree of consensus on many of the issues raised. This section provides an overview of the findings of the research, reviewed in Section 2, on the linkages between child activities and their health/ education/ and well-being.

A. Common findings

3.2 While poverty is generally accepted as being one of the determinants of child labour, there are empirical studies which critique the poverty-based explanations of child labour. These studies have failed to find a positive relation between poverty and child labour. A few studies have shown that: (a) households which own (or operate) relatively large amounts of land tend to make their children work more and (b) households that start their own businesses are more likely to send their children to work. Since ownership of land or business is typically an indicator of greater wealth, the expected relationship between wealth and CL does not hold. A possible explanation as to why greater land ownership or business ownership may contribute to higher child labour is that, in the absence of properly functioning labour markets and/or lack of access to credit markets, owning or controlling assets such as land or business amounts to having the opportunity for more productive use of available inputs such as the household's labour including child labour. The above argument assumes that child and adult labour are substitutes.

3.3 Research has also shown that lack of availability of secondary schooling options influences the decision to work during primary school because the returns to completing education are low. This again supports the non-linear relationship between poverty and child labour. An ILO publication, *An overview of the theory of demand, supply and persistence of child labour* cites Bhalotra (2001) for a study of the wage elasticity of child labour supply. Incorporating subsistence constraints in a model of labour supply, the author shows that negative wage elasticity favours the hypothesis that poverty compels children to work whereas positive wage elasticity would favour the alternative view that children work because the relative returns to school are low.

3.4 Several studies seem to support the view that, though some child work can help in acquiring human capital, by teaching individuals the skills and attitudes

needed to work as well as adults and by enabling them to earn the money that is needed to go to school, in general child labour impedes the acquisition of education (via reduced school attendance rates, poor academic performance) and human capital through non-income channels by, for instance, damaging health or affecting attitudes adversely. This, in turn, might perpetuate inter-generational poverty.

3.5 A few studies have shed light on the relationship between child labour and education which is conditional on the number of siblings in the household. In other words, depending upon the presence of younger or older siblings, one child's labour may make it possible for another child to go to school. For instance, one study found that the number of older siblings has a negative effect on work but this effect is significant only at the secondary school level. Similarly, the study found that the number of younger siblings increases the probability of work before school entry but it decreases the probability of work at the secondary school level. In the ILO publication mentioned above the authors have summarized the findings from a study by Rammohan (2000) who has developed a theoretical framework where fertility and schooling decisions are made in an environment where children contribute through child labour when young and provide old-age security as adults. The model demonstrates that the child wage rate, which is also the opportunity cost of schooling, is a crucial determinant of total fertility. An increase in the child wage rate leads to lower schooling investments and higher fertility levels. However, changes in schooling costs have no impact on fertility decisions. They only affect the allocation of children's time between schooling and child labour.

3.6 Another result on which all the data sets concur is the strong positive role that the level of adult education in the household plays in keeping the child enrolled in school and in improving her/his learning experience. It has been confirmed through various studies that adult female education levels have a stronger positive impact on child learning than do adult male education levels. This supports initiatives for adult literacy programmes and raising awareness of the longer terms effects of child labour such that the returns to education or the benefits of schooling begin to look more attractive.

3.7 In terms of policy implications, the studies reveal that the incidence of child labour might possibly respond to policy interventions such as:

- Food for school-going children;
- Subsidizing education either through cash transfers to parents of school-going children or directly subsidizing school costs such as fees, text books, uniforms [giving a cash transfer to parents could be problematic if they buy land/business and employ their children initially until their incomes rise];
- Promoting technological progress such that it widens the differential between adult and child labour;

- Banning child labour through legislation;
- Flexible school schedules to facilitate attendance of children who must do some work for survival.

3.8 In addition to the above, another study has confirmed the positive effects of three separate policies in Bangladesh: a) compulsory primary education introduced in 1992, b) compulsory school entry at age six and c) universal access to secondary education. All these policies had a substantial impact on school progress.

3.9 In addressing the question, “is there a threshold of (weekly) hours of work for 12-14 year olds below which school attendance and performance are not adversely affected?” Ray *et al* find that there is a statistically significant negative coefficient between learning measure and work hours thus confirming that “work hours adversely affect both school enrolment (i.e. the probability of the child attending school) and the school outcome variables – from the very first hour of work. On the basis of the Tobit specification, the results confirm the effect of child labour on the child’s education as harmful and confirm the hypothesis that the appropriate choice for the hours-of-work threshold is zero. In terms of the four occupational categories analysed (service workers, shop and market sales workers, craft and related workers, sales and services workers in elementary occupations and agricultural workers) results show that a heavy workload does eventually have an adverse effect on the schooling of children in all the occupational categories.

3.10 Although the following papers have not specifically been reviewed for this paper, the ILO publication cited earlier has summarized the relationship between child labour and the failure of credit and insurance markets as addressed by several authors. For example, Baland and Robinson (2000) show that when capital markets are imperfect or when the bequests are zero, child labour may arise in equilibrium even though it is socially inefficient and parents are altruistic. Ranjan (1999) shows how poverty in combination with credit constraints can give rise to the phenomenon of child labour in developing countries. The paper develops a model in respect of an education/child-labour trade-off, as a child at work is most likely to be out of school. The author argues that in the absence of formal access to credit for the poor, the informal credit markets work mainly for short-term loans to meet unforeseen contingencies, whereas poor households need more long-term credit to be able to substitute for the foregone earnings of their children. Such credit is unlikely to be available through the informal credit markets existing in many developing countries.

3.11 Jaffrey and Lahiri (2002) examine the interaction between credit markets, trade sanctions and the incidence of child labour in a two-good, two-period model with unequally wealthy households. While both poverty and poor education quality, *inter alia*, are important determinants of child labour, they find that the incidence of

child labour decreases with the easing of borrowing constraints. They also find that trade sanctions can increase child labour, especially among poor households, a possibility that decreases as their access to credit improves. Basu and Chau (2003)'s study reinforces this nexus that poverty and the absence of reliable legal and financial systems through which the poor can secure loans to safeguard against hunger or unexpected consumption leads to child labour in debt bondage. Thus, there are many studies that corroborate the incidence of child labour in the framework of weak or non-existent capital markets.

B. Inconclusive findings

3.12 It is noted that several papers have attempted to apply bivariate descriptive statistics to determine correlations between child health, sector of work, household chores and age category, but most of them are inconclusive. This is understandable because a correlation is not the same as causation. In addition to making the analysis more rigorous in terms of undertaking multivariate analysis, definitional and measurement issues need to be addressed to lead to sensible and robust estimates.

3.13 One study has explored the interaction between child ill health, hours of work, sector of work and age category of child. However, no clear pattern emerged in the analysis of these indicators and this might have to do with the measurement and analytical limitations of the paper. Similarly, the relationship between involvement in household chores and child health is analysed through survey datasets from six countries, but the descriptive statistics are inconclusive. The authors report that “children spending at least four hours daily on household chores are not clearly worse off health-wise than children without chores responsibilities, and children spending more time on chores actually appear better off health-wise than children for whom household chores constitute only a relatively small time burden. Some types of chores appear to have more impact on health status than others, but the variation in reported illness by chore type is generally quite small.”

4. Suggestions for future research

4.1 Kaushik Basu *et al* hypothesize that if sufficiently disaggregated data are collected for households, ranging from those that own no land to those that own very large quantities of land, a non-linear relation would be found with child labour rising at first as land ownership rises and eventually falling. The latter would result because beyond a point the wealth of the household would come in as the dominant factor, causing child labour to decline.

4.2 There is a scope to survey households with multiple children such that data on birth-order and presence of siblings can be gathered. Since these factors seem to affect the schooling and work decisions within a household, further empirical evidence should be gathered to enhance our understanding of the underlying choices and decisions.

4.3 Although the theoretical literature on child labour such as the paper by Basu and Van (1998) tends to lead many to believe that poverty is the primary cause of child employment, Lire Ersado (2002) shows that poverty is apparently not the main culprit in determining child labour in urban areas. It is suggested that future child labour surveys collect disaggregated data on urban-rural differences as examining urban and rural child labour data separately enables a scrutiny of the validity and applicability of the luxury axiom. As the Ersado paper shows, more evidence for this exists in rural areas and less or no evidence exists in urban areas.

4.4 As some authors have pointed out, more consideration needs to be given to the situation of idle children from the point of failure of human capital development. It has been pointed out that children who work may be better off than idle children in terms of their development and there is scope for research into children's activities to further understand the health, education and well-being implications for idle children.

4.5 Finally, it is not enough to find the correlates of child labour. While the literature on child labour is growing, empirical studies that simultaneously examine the various factors impacting on child labour and schooling, such as returns to education, poverty, credit access, labour market conditions, household domestic responsibilities, school expenditures and parental educational levels, along with community characteristics are few. Multivariate studies that examine the impact of one factor while controlling for others at the same time (such that a causality inference can be made) will contribute more to the understanding of child labour.

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